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EXAMINER	
PORTER, RACHEL L	
ART UNIT	**PAPER NUMBER**
3626	

DATE MAILED: 08/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/431,674	BAGGETT ET AL.	
	Examiner	Art Unit	
	Rachel L. Porter	3626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Notice to the Applicant

1. This communication is in response to the amendment filed on 5/27/05. Claims 1-34 are pending.

Claim Rejections - 35 USC § 101

The rejection of claims 21-27 under 35 U.S.C. 101, is hereby withdrawn due to the amendment filed 5/27/05.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 appears to be a "hybrid claim," as both system components and process steps are recited in the body of the claim. It is unclear to the Examiner which statutory class of invention the Applicant intends to claim (system/article of manufacture or process/method). In particular, it is unclear whether the use of the term "process" in the base claim is intended to mean a processor (a system component), or a software component, or whether the applicants intend to claim a method (a process) with the

recited steps. For the purposes of examination, the examiner will interpret the term process to mean any system component that performs the functions recited in the claims.

Claims 2-14 inherit the deficiencies of claim 1 through dependency, and are also rejected.

As per claim 11, the present claim currently recites that the availability process determines travel options using availability data has been determined to be "low-quality" and treats this data as though it were "high quality" data. It is unclear to the Examiner how this phrase further limits claim 1, or how one set of data is treated as though it were another set of data in this claim. In particular, it is unclear what the applicant means by "low-quality data" and "high-quality data" and how the system/method would process these data in a similar or differential manner. Claims 12-13 inherit the deficiencies of claim 11 through dependency, and are therefore also rejected.

As per claim 12, the claim currently recites "wherein speculatively determines produces the low-quality availability data...". There appears to be term missing from the claim and the Examiner cannot ascertain what the applicant intends to claim. For the purpose of applying prior art, the Examiner will interpret this phrase to mean that "low quality" speculative data is provided by a source internal to the travel system.

Claim Objections

4. Claim 21 is objected to because of the following informalities: the claim appears to be missing the word "on" ("based on evaluating quality..."). Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 21,22 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Lynch et al (US Patent No. 6,119,094). (This reference will be referred to as Lynch '094 throughout this action).

In reference to claim 21, Lynch'094 teaches a method for determining availability of a seat for a mode of transportation (i.e. travel service inventory), comprising:

- Producing in computer system a first set of seat availability queries to send to a first source of seat availability information for a first set of instances of transportation (col. 6, lines 41-56; col. 7, lines 8-20; lines 29-32; col. 9, line 47-col. 10, line 5)
- evaluating in a computer system a quality measure of seat availability information received from the first source of seat availability information to guide a travel

planning system in determining a set of instances of transportation for which a seat is available. (column 2, lines 60-65; figure 3; column 6, lines 11-57; col. 7, lines 29-32, 46-49; col. 9, lines 11-30)

- producing in the computer system a second set of seat availability queries to send to the first or a different source of seat availability information based on the evaluating quality of the availability information to provide the set of instances of transportation for which a seat is available. (See Lynch'094: column 6, lines 11-57; col. 7, lines 29-32, 46-49; col. 9, lines 11-30)

In Lynch '094, the age of the information is evaluated to determine whether or not a predetermined time period has lapsed since the information was last obtained. (i.e. evaluating quality properties of the availability data) (figure 3, column 6, lines 11-17). The update module (i.e. an availability process) may then update the stored availability data by querying the one or more of the CRS's if the stored data if the predetermined time period has elapsed (i.e. executing a second set of seat availability queries to the first or a different source of seat availability base on the outcome of the evaluating quality of the availability information.) (figure 3, col. 6, lines 10-57).

In reference to claim 22, Lynch'094 the method of claim 21 further comprising receiving the set of instances of transportation from a travel planning system in response to a user query. (col. 4, lines 62-col. 5, line 6; col. 6, line 59-col. 7, line 2)

In reference to claim 26, Lynch '094 teaches the computer program product of claim 21 as explained in the rejection of claim 21, and wherein the multiple sources of seat availability information generate seat availability information with differing quality

properties including at least one of freshness, confidence, precision, and validity. The freshness of the data (i.e. the time that has elapsed since the inventory data was obtained) varies for the sources, especially when the sources are queried sequentially (Figure 3, column 6, lines 11-17).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-4,11,13, 15,16,19,23, and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Lynch'094.

In reference to claim 1, Lynch '094 teaches a travel planning system comprising, with a processor and memory storing processes for executing on the processor (Figure 2; col. 3, lines 21-33) the processor comprising:

- a scheduling component that determines a set of travel options (i.e. transportation instances) to satisfy a user's request (column 2, lines 57-60; col. 9, lines 52-67)
- an (availability) component to search/access seat availability information from multiple sources of seat availability information, receives the instances of transportation and uses the results from a first source of multiple sources of

seat availability information for a mode of transportation to determine a set of travel options (i.e. instances of transportation) (col. 6, lines 41-56; col. 7, lines 8-20; lines 29-32; col. 9, line 47-col. 10, line 5)

- determines quality properties of the availability information from the first source of seat availability information (column 2, lines 60-65; figure 3, column 6, lines 11-57, col. 7, lines 46-49)
- determines, based on quality properties, whether the first source of seat availability information reliable, and if the results are not reliable, the availability process executes a second set of availability queries to the first or a different one of the multiple sources of seat availability information based on the outcome of determining quality properties to provide a second set of instances of transportation for which seat is available. (See Lynch'094: col. 2, lines 60-65; col. 6, lines 22-38; Figure 3)

Lynch'094 reference states that the system determines the age of the availability data and also determines how well the availability data meet the certain parameters entered by the user (col. 6, lines 10-61). In other words, the system determines the age (e.g. reliability) and fitness or usefulness of the availability data—two qualities of the availability data. Moreover, the system submits subsequent queries to one or more CRS's (i.e. the first or a different source seat availability data) based on the outcome of a test (i.e. the evaluation of the whether the availability data is too old and therefore

unreliable) to provide a second set of available instances of transportation (i.e. the results returned from the updated queries).

Lynch'094 teaches a system with at least one component to perform the recited functionalities of the availability component. However, Lynch'094 does not expressly disclose whether a single component performs all of the recited functions or whether these functions are carried out by more than one component. However, at the time of the Applicant's invention, it would have been obvious to one of ordinary skill in the art to modify the system of Lynch'094 to have the functions are performed by a single (availability) component. One would have been motivated to do this to maximize the use of each component in a system with limited resources.

In reference to claim 2, Lynch'094 teaches a system wherein the availability component determines whether the source of availability information is reliable, and if the results are reliable, the availability component returns the results (See Lynch'094, col. 6, lines 41-col. 7, line 5). A component of the system determines whether a predetermined time period has elapsed since the data in system inventory database has been obtained (i.e. determining whether the data is outdated/not reliable), but only updates the results when the data is deemed unreliable (i.e. outdated). The system further processes the returned data to determine the fitness of the travel data as a solution if the time period has not elapsed. (i.e. results are reliable)

In reference to claim 3, Lynch '094 teaches that the method of claim 1 as explained in the rejection of claim 1. Furthermore, Lynch teaches a system wherein to execute a second set of seat availability queries to the first or a different one of the

multiple sources, the availability process makes multiple, sequential queries to the first source or a different one of the multiple sources of seat availability information. (See Lynch'094: column 6, lines 11-38; lines 56-57) The system executes the second set of queries (e.g. when it is determined that data in the inventory database is too old.) The system repeats the data query process by querying the one or more CRS's (i.e. the first or a different source of seat availability data).

In reference to claim 4, Lynch '094 teaches that the method of claim 1 as explained in the rejection of claim 1. Furthermore, Lynch teaches a system wherein to execute a second set of seat availability queries the availability process makes multiple, simultaneous queries to multiple ones of multiple sources of seat availability information. (See Lynch'094: column 6, lines 11-38; lines 56-57) The system executes the second set of queries (e.g. when it is determined that data in the inventory database is too old.) The system repeats the data query process by querying the one or more CRS's either simultaneously or sequentially (i.e. the first or a difference source of seat availability data).

As per claim 11, Lynch'094 teaches a system wherein a system component speculatively determines travel options using low quality as though it were high quality data. Lynch'094 reference discloses that speculative calculations (i.e. genetic algorithms) are used to develop a variety of possible travel options (speculative travel options) based loosely upon a user's travel request. (column 7, lines 29-45). The system then sifts through a plurality of candidate pool solutions of varying degrees of fitness and evaluates the fitness of the solutions in the candidate pool. In other words,

data of high and low quality (i.e. high and low degrees of fitness) may be identified as possible solutions/options by the system and are both subjected to the sifting process to identify and/or refine additional travel solution sets. Thus, low quality data is treated as though it were high quality data.

While the Lynch'094 reference teaches a system with at least one component to perform the recited functionalities of the availability component, it does not expressly state whether a single component (i.e. an availability process) performs all of the recited functions or whether these functions are carried out by more than one component. However, one having ordinary skill in the art at the time of the Applicant's invention would have found it obvious to modify the system of Lynch'094 to have the functions are performed by a single (availability) component as explained in the rejection of claim 1.

As per claim 13, Lynch'094 teaches a system wherein the speculative determination of travel options is used to decide what quality of data are needed/ what additional queries should be issued.(col. 6, lines 41-57; col. 7, lines 29-col. 8, line 10). The genetic algorithms are used to produce a set of parameters that are used to identify travel arrangements that may be suitable for a customer. Thus, the genetic algorithms help identify which availability queries will yield the most appropriate solutions and which are of higher quality (i.e. yield results that most closely match the customers travel request.)

In reference to claim 15, Lynch'094 teaches a computer program product embodied on a computer readable medium for use with a travel planning system for

determining availability of a seat for a mode of transportation, comprises instructions for causing a computer to:

- receive a set of instances of transportation that satisfy a user query; (col. 4, lines 62-col. 5, line 6; col. 6, lines 41-56; col. 6, line 59-col. 7, line 2; col. 7, lines 8-20; lines 29-32; col. 9, line 47-col. 10, line 5)
- determine quality of a first set of availability information of a first source of availability information to guide a travel planning system to determine a subsequent set of instances of transportation for which a seat is available, (See Lynch'094:column 2, lines 60-65; figure 3, column 6, lines 11-61, col. 7, lines 46-49; col. 9, lines 11-30), and if the quality of the availability information is low,
- executes a second set of seat availability queries to the first or a different source of seat availability information to provide a second set of available instances of transportation from the first source or a different source of the seat availability information and;
- produces from the second set of seat availability information and a set of the instances of transportation, a set of instances of transportation for which a seat is available. (See Lynch'094: column 2, lines 60-65; figure 3, column 6, col. 6, lines 10-6, col. 7, lines 46-49; col. 9, lines 11-30)

Insofar as the system of Lynch'094 uses computers, software module(s) and/or sub-module(s) to perform the recited steps of claim 5 (col. 3, lines 21-51), it is

respectfully submitted that the system/method includes a computer program product comprising instructions for causing a computer to perform the recited steps.
In the method disclosed by Lynch, the update module may update the stored availability data by querying the one or more of the CRS's if the stored data if the predetermined time period has elapsed (i.e. executing a second set of seat availability queries to the first or a different source of seat availability based on the outcome of evaluating quality of the availability information) (figure 3, col. 6, lines 10-57). Furthermore, the system of Lynch'094 repeatedly updates availability data stored in the inventory database tests the fitness of solutions, and sifts through a plurality of candidate pools (i.e. multiple sets of transportation information) to identify a plurality of low-cost travel arrangements (col. 6, lines 41-61)

Lynch'094 does not expressly disclose whether the system queries the same or different source(s) of seat availability information, but the system does repeatedly query various sources for seat availability data (i.e. first, second, third... nth sets of queries). (col. 6, lines 22-38), thus generating multiple sets (i.e. subsequent sets) of transportation information. (col. 6, lines 22-38) At the time of the Applicant's invention, it would have been obvious to one of ordinary skill in the art to query one or more different sources of seat availability information (i.e. sources of higher quality) if the results from the first are of low quality (i.e. unreliable). As suggested by Lynch'094, one would have been motivated to do this to maximize the likelihood that the system will identify a plurality of (low-cost) travel arrangements to be offered to a customer while minimizing the involvement of a travel agent. (col. 1, lines 66-col. 2, line 2, lines 19-22).

In reference to claim 16, Lynch'094 teaches the computer program product of claim 15 as explained in the rejection of claim 15. Claim 16 further recites: " instructions to send the second set of seat availability queries to a different higher quality source [of] seat availability information if the results from the first source are low quality." Lynch'094 teaches a computer program product comprising instructions to send seat availability queries to a one or more computer reservation systems (sources of seat availability information) if the information is outdated (i.e. results from first source(s) are not reliable). (column 6, lines 22-25). Lynch'094 does not expressly disclose whether the system queries the same or different source(s) of seat availability information, but the system does repeatedly query various sources for seat availability data (i.e. first, second, third... nth sets of queries). (col. 6, lines 22-38) At the time of the Applicant's invention, it would have been obvious to one of ordinary skill in the art to query one or more different sources of seat availability information (i.e. sources of higher quality) if the results from the first are of low quality (i.e. unreliable). As suggested by Lynch'094, one would have been motivated to do this to maximize the likelihood that the system will identify a plurality of (low-cost) travel arrangements to be offered to a customer while minimizing the involvement of a travel agent. (col. 1, lines 66-col. 2, line 2, lines 19-22).

In reference to claim 19, Lynch '094 teaches the computer program product of claim 15 as explained in the rejection of claim 15, and wherein the multiple sources of seat availability information generate seat availability information with differing quality properties including at least one of freshness, confidence, precision, and validity. The freshness of the data (i.e. the time that has elapsed since the inventory data was

obtained) varies for the sources, especially when the sources are queried sequentially (Figure 3, column 6, lines 11-17).

In reference to claim 23, the limitations of this claim are addressed by the rejections of claims 16 and 21, and incorporated herein.

In reference to claim 29, Lynch'094 teaches the travel planning system of claim 1 as explained in the rejection of claim 1. Claim 29 further recites "wherein the actual seat availability queries that are sent to a source of airline seat availability information are selected to increase the number of available solutions found (See Lynch'094: col. 6, lines 25-38; lines 56-57) or to increase the likelihood that the availability of the desirable solutions has been verified with a high degree of confidence." (See Lynch'094: col. 6, lines 37-57; col. 7, line 29-col. 8, line 18)." The system executes the second set of queries when it is determined that data in the inventory database is too old. The system of Lynch'094 also searches multiple reservation systems, thereby increasing the number of available solutions. Furthermore, the system of Lynch'094 repeatedly updates availability data stored in the inventory database, tests the fitness of solutions, and sifts through a plurality of candidate pools, thereby increasing the likely that the information (the desirable solutions) is accurate. (i.e. has been verified with high confidence).

In reference to claim 30, Lynch'094 teaches the travel planning system of claim 1 wherein multiple responses which contain different availability information and/or quality properties are simultaneously maintained in the travel planning system. (col. 4, lines 6-41; col. 6, lines 11-38) The inventory database maintains information from various

computer reservation systems (i.e. multiple responses) on travel service inventory, available fare classes, carriers providing service, and description of available service types. (i.e. different quality properties/different seat availability information)

In reference to claim 31, Lynch '094 teaches a system further comprising a faring process that determines fares valid for at some of the instances in the set of instances of transportation. (col. 2, lines 60-65; col.8, lines 32-55)

In reference to claim 32, Lynch'094 teaches a system further comprising a faring process that determines fares valid for at least some of the instances in the set of instances of transportation for which a seat is available. (col. 2, lines 60-65; col.8, lines 32-55)

9. Claims 5-8, 10,18,20,25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch'094 in view of Lynch et al (US Patent No. 5,839,114—referred to hereinafter as Lynch'114).

In reference to claim 5, Lynch'094 teaches the travel planning system of claim 1 as explained in the rejection of claim 1. Lynch '094 does not specifically teach that there are different costs associated with accessing the different sources of seat availability information, but does teach that the system accesses plurality of availability sources. (col. 6, lines 22-38). Lynch '114 teaches it is well known in the art that different sources of seat availability data (e.g. proprietary CRS's) often have differential costs associated with accessing/obtaining availability information. (column 1, lines 21-38) At the time of the applicants' invention, it would have been obvious to one of ordinary skill in the art that the sources of availability data in the system of Lynch '094 would have

different costs (i.e. fixed/marginal costs including time, communication, computation, and monetary costs) associated with accessing seat availability data. One would have been motivated to include these charges to ensure that the CRS providers are fairly compensated (e.g. compensated on a per use basis) for the use and maintenance of their data systems.

In reference to claim 6, Lynch '094 and Lynch'114 in combination teach the travel planning system of claim 5 as explained in the rejection of claim 5. Furthermore, Lynch'114 teaches a travel planning system wherein a threshold is used to help control the costs of accessing availability data. The system calculates which source of seat availability data will optimize the hits-to-bookings ratio for the user (i.e. travel agency) and thereby lower the costs or fees charged to user (i.e. travel agency). (column 1, lines 26-38; col. 2, lines 31-38) The system stores the target hits-to-booking ratio (i.e. threshold) for each availability source and determines whether that source should be accessed based on its target hits-to-booking ratio (i.e. threshold) (figure 3; col. 6, lines 4-10) At the time of the applicant's invention, it would have been obvious to one of ordinary skill in the art to combine the teachings of Lynch'094 with the teachings of Lynch'114 so that the travel planning system thresholds are associated with accessing availability data. One would have been motivated to do this so that the user is made aware of the costs of arranging travel and is more economical in using the resources.

In reference to claims 7 and 8, Lynch'094 does not specifically teach a method wherein the thresholds holds are timeouts or cost limits or that availability component prioritizes queries to a source to remain under the specified cost threshold. Lynch '114

teaches a system wherein the system prioritizes which availability source should be queried based on the likelihood that the user will make a reservation from that availability source (i.e. the user's hit-to-booking ratio) (column 4, lines 26-44). This ratio impacts the user's cost for accessing this data and effectively serves as a cost threshold. To lower the costs of accessing the availability source, the user must remain under certain hit-to-bookings ratio. At the time of the applicants' invention, it would have been obvious to one of ordinary skill in the art to combine the teachings of Lynch'094 with the teachings of Lynch'114 using the rationale applied in the rejection of claim 6.

In reference to claim 10, Lynch '094 teaches the travel planning system of claim 1 as applied to the rejection of claim 1 above. Lynch'094 does not teach a system wherein the availability process determines the tradeoffs between costs of accessing the data and the properties of the response. Lynch'114 teaches a travel planning system wherein the tradeoffs between costs of accessing the data and the properties of the response are weighed. (column 2, lines 31-38; column 4, lines 26-42) The system determines the likelihood that accessing a particular CRS will result booking or not. Successful booking decreases the user's hits-to-booking ratio and lowers the cost of accessing the availability source (col. 1, lines 19-38) Accessing the source (CRS) without booking through that CRS increases the ratio and will result in the user paying (or paying more) to access the availability source. At the time of the applicants' invention, it would have been obvious to one of ordinary skill in the art to modify the teachings of Lynch'094 so that the cost of accessing a resource are weighed against

benefits gained by accessing that resource. One would have been motivated to do this to make the system more economical and to save money and time.

In reference to claim 18, Lynch'094 teaches the computer program product of claim 15 as explained in the rejection of claim 15. Lynch '094 does not specifically teach that there are different costs associated with accessing the different sources of seat availability information, but does teach that the system accesses plurality of availability sources. (col. 6, lines 22-38) Also, Lynch'094 teaches that a threshold limit can be set for how often the availability component accesses the sources of seat availability data (col. 6, lines 12-21), but does not specifically teach that this limit is for cost containment purposes. Lynch '114 teaches it is well known in the art that different sources of seat availability data (e.g. proprietary CRS's) often have differential costs associated with for accessing/obtaining availability information. (column 1, lines 21-38) At the time of the applicants' invention, it would have been obvious to one of ordinary skill in the art that the sources of availability data in the system of Lynch '094 would have different costs (i.e. fixed/marginal costs including time, communication, computation, and monetary costs) associated with accessing seat availability data. One would have been motivated to include these charges to ensure that the CRS providers are fairly compensated (e.g. compensated on a per use basis) for the use and maintenance of their data systems.

Furthermore, Lynch'114 teaches an automated travel planning system wherein a threshold is set to help control the costs of accessing availability data (i.e. setting a threshold limit on the availability process to access the availability sources). The

system calculates which source of seat availability data will optimize the hits-to-bookings ratio for the user and thereby lower the costs or fees charged to user. (column 1, lines 26-38; col. 2, lines 31-38) The system stores the target hits-to-booking ratio (i.e. threshold) for each availability source and determines whether that source should be accessed based on its target hits-to-booking ratio (i.e. threshold) (figure 3; col. 6, lines 4-10) At the time of the applicant's invention, it would have been obvious to one of ordinary skill in the art to further modify the system (and computer program product) of Lynch'094 with the teachings of Lynch'114 so that the thresholds are used to control costs associated with accessing availability data. One would have been motivated to ensure that system user is aware of the costs of arranging travel, and is therefore more economical in using the resources.

In reference to claim 20, Lynch'094 teaches the computer program product of claim 15, as explained in the rejection of claim 15. Lynch'094 does not teach that the availability process determines the tradeoffs between costs of accessing the data and the properties of the response, but does disclose that a primary goal of the automated system is minimize travel expenses for the user by developing low-cost travel options. (col. 2, lines 14-21). Lynch'114 teaches an automated travel planning system (i.e. computer instructions) to determine the tradeoffs between costs of accessing the data and the properties of the response. (column 2, lines 31-38; column 4, lines 26-42) The system determines the likelihood that accessing a particular CRS will result booking or not. Successful booking decreases the user's hits-to-booking ratio and lowers the cost of accessing the availability source (col. 1, lines 19-38) Accessing the source (CRS)

without booking through that CRS increases the ratio and will result in the user paying (or paying more) to access the availability source. At the time of the applicants' invention, it would have been obvious to one of ordinary skill in the art to modify the teachings of Lynch'094 so that the cost of accessing a resource are weighed against benefits gained by accessing that resource. One would have been motivated to do this to minimize costs for the user seeking a plurality of low-cost travel options while also minimizing the time required to access these options (Lynch'094: col. 2, lines 14-21).

In reference to claim 25, the limitations of this claim are addressed by the rejection of claims 18 and 21, and incorporated herein.

In reference to claim 27, the limitations of this claim are addressed by the rejections of claims 20 and 21, and incorporated herein.

10. Claims 9, 17 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch'094 in view of Walker et al (US Patent No. 5,897,620—referred to hereinafter as Walker).

In reference to claim 9, Lynch '094 teaches the system of claim 1 as explained in the rejection of claim 1. Claim 9 also recites: "wherein the first or a different one of the multiple sources of seat availability information is a source of predicted availability information..." Lynch'094 does not specifically disclose that that the sources of availability data are sources of predicted availability information, but does teach querying a plurality of availability data sources that have different data quality properties associated the replies generated from the queries. (Figure 3, column 6, lines 11-17) The freshness of the data (i.e. the time that has elapsed since the inventory data was

obtained) varies for the sources. Walker teaches that the use of forecasted inventory data (i.e. predicted availability information) from a predicted availability source (e.g. RMS) for arranging and pricing travel/ transportation options is well known in the art. (col. 6, lines 9-26). At the time of the Applicant's invention, it would have been obvious to one of ordinary skill in the art to include predicted availability information (i.e. forecasted inventory data) among the availability sources queried to determine a set of potential travel options for a user in the system of Lynch'094. One would have been motivated to include forecasted inventory data to permit travel service providers (e.g. airlines) to post travel information for users to review and/or select while minimizing system downtime required by constant updates with real-time availability data.

In reference to claim 17, Lynch'094 teaches that the computer program product of claim 15 as explained in the rejection of claim 15. Lynch'094 further teaches a computer implemented method wherein a system component (i.e. the availability component) can make multiple, sequential queries to send availability queries to multiple ones of multiple sources of seat availability information. (column 6, lines 11-38) Lynch'094 does not specifically disclose that that the sources of availability data include sources of predicted availability information (i.e. predictor sources of seat availability information). Walker teaches that the use of forecasted inventory data (i.e. predicted availability information) from a predicted availability source (e.g. RMS) for arranging and pricing travel/ transportation options is well known in the art. (col. 6, lines 9-26). At the time of the Applicant's invention, it would have been obvious to one of ordinary skill in the art to that the availability sources queried to determine a set of potential travel

options for a user in the system of Lynch'094 include predictor sources of seat availability information (i.e. forecasted inventory data). One would have been motivated to include forecasted inventory data in the data provided by the availability sources to permit travel service providers (e.g. airlines) to post travel information for users to review and/or select while minimizing system downtime associated with constant real-time availability data updates.

In reference to claim 24, the limitations of this claim are addressed by the rejections of claims 17 and 21, and incorporated herein.

11. Claim 12 and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch'094 in view of Hornick (US Patent No. 5,270,921).

As per claim 12, Lynch'094 discloses a system wherein travel options are speculatively determined using low quality data as though it were high quality data, but does not specifically teach that the low quality data are guessed at or computed internal to the travel planning process. Hornick discloses a system wherein availability data are computed or guessed internal to the travel planning process. (col. 2, lines 41-53; col. 6, lines 57-62) At the time of the Applicant's invention, it would have been obvious to one of ordinary skill in the art to modify the system of Lynch'094 with the teaching of Hornick to include the projected (i.e. computed or guessed at) availability data for use in the travel planning process. One would have been motivated to do this so that travel providers could offer customers a large selection of potential travel options while accounting for the probabilistic and complex nature of demand, to maximize travel revenue. (Hornick: col. 2, lines 21-53)

In reference to claims 33-34, Lynch'094 teaches a system further comprising a faring process that determines fares valid for at least some of the instances in the set of instances of transportation (e.g. those for which a seat is available) (col. 2, lines 60-65; col.8, lines 32-55). However, Lynch'094 does not expressly disclose the order in which the processes are executed. Hornick teaches a system/ method wherein seat availability is determined after a faring process (i.e. availability process is executed after a faring process). (col. 6, lines 44-62) At the time of the Applicant's invention, it would have been obvious to one of ordinary skill in the art to modify the system of Lynch'094 with the teaching of Hornick to allow a faring process to be executed prior to an availability determination (i.e. availability process). As suggested by Hornick, one would have been motivated to include this feature to maximize travel service provider revenue while accounting for the probabilistic and complex nature of demand. (Hornick: col. 2, lines 21-53)

12. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch'094 in view of Slotznick (US 5,983,200).

Lynch'094 teaches the system of claim 1 as explained in the rejection of claim 1. Lynch '094 further teaches a system wherein fare information is determined (i.e. valid fares for some of the travel options are determined) (col. 2, lines 60-65; col. 8, lines 32-55). Lynch'094 does not specifically teach that the travel planning data are sent to an intelligent client for further processing. Slotznick teaches a system wherein an intelligent client (agent) is used to accomplish delegated tasks such as preparing and arranging travel reservations. (col. 13, lines 1-23). Furthermore, Slotznick teaches that

the intelligent agent accumulates a learned knowledge database of details related to a task each time it performs that task. At the time of the applicants' invention, it would have been obvious to one of ordinary skill in the art to modify the system taught by Lynch'094 with the teachings of Slotznick so that a the client computer (i.e. travel agency workstation) functions as an intelligent client which can further process and integrate the travel planning data (i.e. scheduling, fare, and availability information) and schedule travel arrangements. One would have been motivated to do this to make the travel planning system and method of Lynch'094 faster and more efficient. As indicated by Slotznick, the using an intelligent agent speeds the execution of tasks and ensures that accumulated pertinent data (e.g. traveler preferences) are incorporated in travel planning process. (column 3, lines 45-50)

13. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Lynch et al (US Patent No. 6,119,094-- referred to as Lynch '094) in view of Official Notice. (This reference will be throughout this action).

In reference to claim 28, Lynch'094 teaches the system of claim 1 as explained in the rejection of claim 1. Lynch'094 also teaches the use of genetic algorithms to sift through possible solutions (candidate pools) to determine the fitness of various travel options (i.e. solution) (col. 6, lines 41-56). Lynch'094 does not specifically disclose the use of "probabilistic confidence bounds describing uncertainty in measurements" for the solutions. However, it is respectfully submitted that the use of confidence intervals (e.g. "probabilistic confidence bounds describing uncertainty in measurements") are commonly used in mathematic/probability calculations. At the time of the Applicant's

invention, it would have been obvious to one of ordinary skill in the art to include such confidence intervals in the calculations performed by the system of Lynch'094. One would have been motivated to do this to monitor the accuracy and reliability of the obtained data, and to enable users to adjust the intervals to increase or decrease the number of candidate pools created to further assist the system in identifying a plurality of low-cost travel options for travelers.

Response to Arguments

14. Applicant's arguments filed 5/27/05, have been fully considered but they are not persuasive.

(A) The Applicant's argue that claim 11 is definite is reciting low quality data, speculative data is treated as high quality data.

In response, the Examiner respectfully disagrees. It is noted that Applicant has amended the claim to attempt to clarify the claim language. It remains unclear to the Examiner how one set of data is treated as though it were another set of data in this claim. In particular, it is unclear what the applicant means by "low-quality data" and "high-quality data" and how the system/method would process these data in a similar or differential manner.

(B) The Applicants argue that the Lynch reference does not process seat availability information, as required by the limitations of claim 21 in particular.

In response, the Examiner respectfully disagrees with the Applicant's interpretation of the art, and in particular with the Applicant's narrow interpretation of the term "seat availability data" in the current claim language. As explained in the current art rejection, the Lynch reference does in fact process several types of travel information, including availability data. (See Lynch'094: column 2, lines 60-65; figure 3, column 6, col. 6, lines 10-6, col. 7, lines 46-49; col. 9, lines 11-30—querying one or more central reservation systems/CRS's) The system of Lynch'094 retrieves inventory information for modes of transportation from one or more computer reservation systems. (col. 6, lines 31-38) Moreover, the system/method of Lynch'094 sifts through the retrieved data to find solutions, which match the users parameters. In each case, the Examiner interprets the transportation inventory data and the solutions that match the parameters for a user seeking to book travel arrangements to include seat availability information.

As to applicant's arguments use differing quality properties in generating availability data, the Lynch reference clearly states that the system determines the age of the availability data and also determines how well the availability data meet the certain parameters entered by the user (col. 6, lines 10-61). In other words, the system determines the age and fitness or usefulness of the availability data—two qualities of the availability data.

(C) The Applicants argue that Lynch'094 does not teach an availability process that can access seat availability information from multiple sources. Applicants further argue Lynch does not perform a second set of queries based upon information from the first set of queries and does not use quality measures in retrieving data.

In response, it is respectfully submitted that the Applicant fails to appreciate the vast breadth of the claim(s), as presently recited. For instance, the Applicant asserts that the system of Lynch'094 does not determine quality properties of the availability data or the reliability of the data source. However, the Lynch reference clearly states that the system determines the age of the availability data and also determines how well the availability data meet the certain parameters entered by the user (col. 6, lines 10-61). In other words, the system determines the age and fitness or usefulness of the availability data—two qualities of the availability data.

The current claim language does not provide a definition or description of which qualities are determined by the system and the Applicant fails to point to any specific sections of the specification that define the term "quality properties." Instead, the Applicant apparently relies upon the fact that the claim recites that the quality properties are used to determine whether the data are "reliable." Again, no definition, description, or objective and quantifiable measure of "reliability" is provided in the current claim language or in sections of the specification cited by the Applicant. Therefore, the Examiner has given the claim language the broadest reasonable interpretation.

While the term "reliability" is not expressly disclosed in the cited section of the Lynch'094 reference in connection with the query and results return process and data

update process, it is respectfully submitted that one of ordinary skill in the art would have reasonably understood that the age (and fitness) of the availability data are indications of the reliability of the data. The existence of the update module in Lynch'094 at least suggests that outdated availability data could make the data unreliable. Consequently, the system submits subsequent queries to one or more CRS's (i.e. the first or a different source seat availability data) based on the outcome of a test (i.e. the evaluation of the whether the availability data is too old and therefore unreliable) to provide a second set of available instances of transportation (i.e. the results returned from the updated queries).

The system of Lynch'094 retrieves inventory information for modes of transportation from one or more computer reservation systems. (col. 6, lines 31-38) Moreover, the system/method of Lynch'094 sifts through the retrieved data to find solutions, which match the users parameters. In each case, the Examiner interprets the transportation inventory data and the solutions that match the parameters for a user seeking to book travel arrangements to include seat availability information.

(D) Applicant argues that the Examiner has given the term seat availability data an overly broad interpretation and further argues that the specification has not used non-committal language in defining availability data. The Applicant further asserts that the Examiner should give the term its "plain meaning."

In response, the Examiner respectfully submits that the "plain meanings" of the phrases "seat availability data" and sources of seat availability data have been applied in interpreting the claim language and in applying the prior art.

Applicant apparently argues that no special definition has been applied or fashioned in the specification, but that the industry recognizes that the Applicant's description of "availability data"—the travel provider's willingness to sell the travel for the given cost--is the "industry's standard definition." However, even if applicant's assertion is accurate, it is noted that the passage cited by the Applicant on page 13 of the response does not provide a definition (special or standard) for "seat availability information." Moreover, the fact that the Lynch system retrieves inventory for various fare classes and various prices for different travel providers (col. 3, lines 34-65; col. 4, lines 6-22; col. 6, lines 22-38) means that the seat availability information/availability data in the Lynch does provide information on a travel provider's willingness to sell the travel at a given cost.

(E) Applicant argues that claims the Lynch '094 and '114 references fail to teach that different sources of predicted seat availability information have different fixed and modular costs associated with obtaining information.

In response, Lynch '094 does not specifically teach that there are different costs associated with accessing the different sources of seat availability information, but does teach that the system accesses plurality of availability sources. (col. 6, lines 22-38). Lynch '114 has been relied upon to disclose that it is well known in the art that different

sources of seat availability data (e.g. proprietary CRS's) often have differential costs associated with accessing/obtaining availability information. (column 1, lines 21-38)

The test for obviousness is that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is *what the combined teachings of the references would have suggested to those of ordinary skill in the art.* See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). At the time of the applicants' invention, it would have been obvious to one of ordinary skill in the art that the sources of availability data in the system of Lynch '094 would have different costs (i.e. fixed/marginal costs including time, communication, computation, and monetary costs) associated with accessing seat availability data. One would have been motivated to include these charges to ensure that the CRS providers are fairly compensated (e.g. compensated on a per use basis) for the use and maintenance of their data systems.

(F) The Applicants argue that Lynch and Walker do not teach a prediction of seat availability information with different quality properties.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The Lynch reference was relied upon as a primary reference to disclose a system for obtaining availability data of different quality properties, as explained in the rejections of claims 9, 17 and 24. Walker discloses the use of *expected* (i.e. predicted)

and actual demand and how this information is used to project/predict the need for changes in inventory. (col. 4, lines 66-col. 5, line 29). Moreover, Walker expressly states that the RMS of the disclosed system predicts based on historical information whether there will be empty seats on a given flight. (i.e. a source of predicted seat availability information)

(G) On page 15, the Applicants argue that the applied references do not disclose that limitations of claim 12.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Moreover, the test for obviousness is not whether the claimed invention is expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). A combination of references (i.e. Lynch'094 in view of Hornick) has been applied to address the limitations of claim 12.

The current claim language does not provide a definition or description of which qualities are determined by the system and the Applicant fails to point to any specific sections of the specification that define the term "quality properties." Therefore, the Examiner has given the claim language the broadest reasonable interpretation.

While the terms "high quality" and "low quality" are not expressly disclosed in the cited section of the Lynch'094 reference in connection with the query and results return process and data update process, one of ordinary skill in the art would have reasonably understood that the age (and fitness) of the availability data are indications of the reliability of the data. The existence of the update module in Lynch'094 at least suggests that outdated availability data could make the data unreliable. Consequently, the system submits subsequent queries to one or more CRS's (i.e. the first or a different source seat availability data) based on the outcome of a test (i.e. the evaluation of the whether the availability data is too old and therefore unreliable) to provide a second set of available instances of transportation (i.e. the results returned from the updated queries).

Lynch'094 does not specifically teach that the low quality data are guessed at or computed internal to the travel planning process. Hornick discloses a system wherein availability data are computed or guessed internal to the travel planning process. (col. 2, lines 41-53; col. 6, lines 57-62) At the time of the Applicant's invention, it would have been obvious to one of ordinary skill in the art to modify the system of Lynch'094 with the teaching of Hornick to include the projected (i.e. computed or guessed at) availability data for use in the travel planning process with the motivation of offering customers a large selection of potential travel options while accounting for the probabilistic and complex nature of demand, to maximize travel revenue. (Hornick: col. 2, lines 21-53)

(H) The Applicant argues that claim 14 is patentable over Lynch'094 in view of Slotznick, because Slotznick does not teach an intelligent client for processing and integrating scheduling and fare information and availability data in a travel planning system.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The Lynch'094 provides a travel planning system as set forth in claim 1 while the Slotznick reference was relied upon to disclose the use of an intelligent client (agent) to accomplish delegated tasks such as preparing and arranging travel reservations. (i.e. further processing and integration of travel data) (column 13, lines 1-23). At the time of the applicants' invention, it would have been obvious to one of ordinary skill in the art to modify the system taught by Lynch'094 with the teachings of Slotznick so that the client computer (i.e. travel agency workstation) functions as an intelligent client which can further process and integrate the travel planning data and schedule travel arrangements. As suggested by Slotznick, one would have been motivated to do this to speed the execution of tasks and to ensure that accumulated pertinent data (e.g. traveler preferences) are incorporated in travel planning process. (col. 3, lines 45-50), thereby making the travel planning system and method of Lynch'094 faster and more efficient.

(I) The Applicants argue that the combination of Lynch'094 in view of Official Notice in the rejection of claim 28 is improper because the use of confidence intervals could not be incorporated into the system disclosed by Lynch'094.

In response to applicant's argument that confidence intervals could not be used in the system of Lynch'094, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

The Lynch'094 reference was relied upon to disclose the limitations of claim 1 and to teach the use of genetic algorithms to sift through possible solutions (candidate pools) to determine the fitness of various travel options (i.e. solution) (col. 6, lines 41-56). The Examiner has relied on Official Notice only to explain that the use of confidence intervals (e.g. "probabilistic confidence bounds describing uncertainty in measurements") is common in mathematic/probability calculation results. While Lynch'094 does not specifically disclose the use of "probabilistic confidence bounds describing uncertainty in measurements" for the fitness of the solutions, one having ordinary skill in the art at the time of the Applicant's invention would have found it obvious to include such confidence intervals in the calculation results (i.e. determining the fitness of travel solutions) performed by the system of Lynch'094. One would have

been motivated to include the use of confidence intervals to monitor the accuracy and reliability of the obtained data.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rachel L. Porter whose telephone number is (571) 272-6775. The examiner can normally be reached on M-F, 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Thomas can be reached on (571) 272-6776. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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RP

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